



SEPTEMBER 2021

CLIMATE CHANGE

The Importance of Infrastructure in the Transition to Low Carbon

Part Two: Climate Change Risks in the Infrastructure Sector

Ursula Tonkin
Head of Listed Strategies



WHITEHELM
CAPITAL



INTRODUCTION

Recently the UN Intergovernmental Panel on Climate Change (IPCC), which is the United Nations body for assessing the science related to climate change, published a report highlighting the long-lasting impacts of global warming and the increasing “likelihood of severe, pervasive and irreversible impacts for people and ecosystems”.¹ Unsurprisingly, the report confirmed that substantial emissions reductions are required to reduce the risks associated with climate change.

In the first part of this three-part series, we looked at just how worrying the current situation for climate change is, emphasising that a serious, global, and coordinated effort is required urgently to avoid disaster. Infrastructure has a key role to play in this effort as a sector which is both due to be impacted by climate change and a major carbon emitter.

This second part of the series looks at the various costs and risks which the investor needs to carefully examine in order to successfully navigate the infrastructure asset class.

¹ <https://www.ipcc.ch/assessment-report/ar6/>



PHYSICAL RISKS AND ADAPTATION COSTS

The risks which climate change presents to infrastructure assets can be broken down into two major classes: physical risk and the costs of adaptation, and financial risks and the costs of transition.

Physical risks are the kinds of risks which the changing physical world, as a result of climate change, will have on infrastructure assets. These include:

- Water scarcity
- Damage to infrastructure from sea levels rising
- Drought
- Heat waves and increasing prevalence and intensity of bushfire events
- Storm surges, including lightning strikes, extreme winds and heavy rainfall and flooding

“Coal and nuclear power generation is very water intensive: thermoelectric power plants have been the largest water users in the United States since 1965, even greater than agriculture. Water scarcity is emerging as a major issue for power plants in many dry regions.”

Natural Resources Defense Council, ‘Power Plant Cooling and Associated Impacts’, 2014.²

Adaptation costs are those costs required to mitigate against these changes, and include increased capex required to deal with more chronic issues such as protecting low-lying assets like airport runways from rising sea levels, as well as to improve the resilience of assets during

extreme events. Asset owners will also face increased insurance costs against extreme weather events.

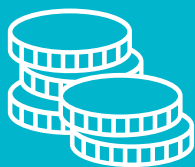
Recent examples of the impacts and costs that will become more frequent include:

- Destruction of assets by wildfires and floods. For example, water utilities are particularly impacted by flooding and contamination, which can destroy pump equipment and significantly increase treatment costs.
- Drought negatively impacting water utility and hydro power plant revenues in California.
- Forced scale-back of coal fired and gas fired power output due to extreme heat and lack of water. This is becoming more frequent in places like Australia, India and the US. During heat waves, electricity demand typically increases in tandem with water temperatures, meaning coal and gas fired power stations cannot cool effectively.³
- In 2021, an extreme heat wave which impacted the US Pacific Northwest and parts of Canada resulted in buckled roads and rail tracks, disruptions to public transport systems, and rolling power blackouts.

Some of these risks, such as increased insurance premiums and increased costs of asset hardening (i.e., fortifying assets against the physical climate change impacts, for example, putting electricity transmission lines underground, or building sea walls around low lying assets), can be mitigated by avoiding investment in infrastructure assets which do not have the ability to pass through these costs.

² <https://www.nrdc.org/sites/default/files/power-plant-cooling-IB.pdf>

³ <http://www.smithschool.ox.ac.uk/research-programmes/stranded-assets/satc.pdf>



TRANSITION COSTS AND FINANCIAL RISKS

Burning fossil fuels for electricity and heat is by far the biggest single contributor to global greenhouse gas emissions, representing around 50% of global emissions. Agriculture (20%) and Transport (16%) are the other main contributors⁴. To meet the Paris Agreement targets of warming of no more than 2°C, emissions from energy production will need to be reduced to effectively zero by 2050, with global emissions needing to have peaked already in 2020 and now be in rapid decline.⁵ This transition will have a massive impact on emissions-intensive industries.

Transition risk is the risk of policy, legal, technology, and market changes to asset operations and earnings. These risks include the costs to be borne through transition to a low carbon economy, including carbon price increases, stranded asset cost, technology disruption, and greater regulation risks.

Recent examples of financial impacts that will become more frequent are:

- Significant write-offs of fossil fuel generation assets across most developed countries, due to lower demand and lower power prices. Between 2010 and 2015, EY calculated that integrated utilities across Europe wrote off €120 billion of assets.⁶
- Volatile coal and oil prices. The fall in coal demand led to a near collapse of the US coal mining industry in 2015. From June 2014 to the end of 2015, shareholders in US coal mines lost 85% of their investment.⁷

- Reduced demand for natural gas and electricity through transmission and distribution (T&D) networks. For example, a growing number of cities and regions are banning gas connections for new residential development. In the UK, installing new gas heating will be banned from 2025. Driven by increasing renewable power supplies, in 2018 gas flows in northern California were down as much as 16% compared to the prior year.⁸
- Refinancing risk: the availability and the cost of debt for fossil fuel-linked assets is deteriorating as banks and other funders withdraw. Owners of Australia's newest coal-fired power plant wrote their investment down to zero, following coal supply issues and "difficulty in refinance of senior secured loans".
- Insurance cost risk: with the incidence of natural disasters rising, insurance costs are rising steadily. In addition to increasing premiums, fossil fuel-linked infrastructure assets have a shrinking pool of insurers willing to underwrite them. According to the Insure Our Future network, by May 2020, 19 large insurers had adopted policies restricting their coverage of the coal and tar sands sectors.
- Fines and class actions against corporations not taking appropriate mitigation action. For example, the class action against SP Ausnet in relation to the 2009 Victorian bush fires, and the liability borne by Californian electric utilities in relation to the 2017 and 2018 bush fires, which forced utility PG&E into bankruptcy, with the stock declining from \$70 to a low of \$5. (Faulty

⁴ <https://www.wri.org/blog/2020/02/greenhouse-gas-emissions-by-country-sector>

⁵ Climate Analytics, "Implications of the 1.5C Limit in the Paris Agreement for Climate Policy and Decarbonisation", August 2016. http://climateanalytics.org/files/1p5_australia_report_ci.pdf

⁶ https://www.ey.com/en_gl/power-utilities/is-any-end-in-sight-for-power-and-utilities-asset-impairments-in-europe

⁷ <https://www.ft.com/content/9254dfd2-8e4e-11e7-a352-e46f43c5825d>

⁸ <http://www.utilitydive.com/news/shift-towards-renewables-behind-decline-in-california-gas-demand/449627>



electricity infrastructure is a major cause of catastrophic bush fires).

The necessary transition to renewable energies will have profound effects across the energy industry, with pricing and market structure implications and increased regulatory interventions in power grids. Transition risks and opportunities will also impact transport assets on a large scale.

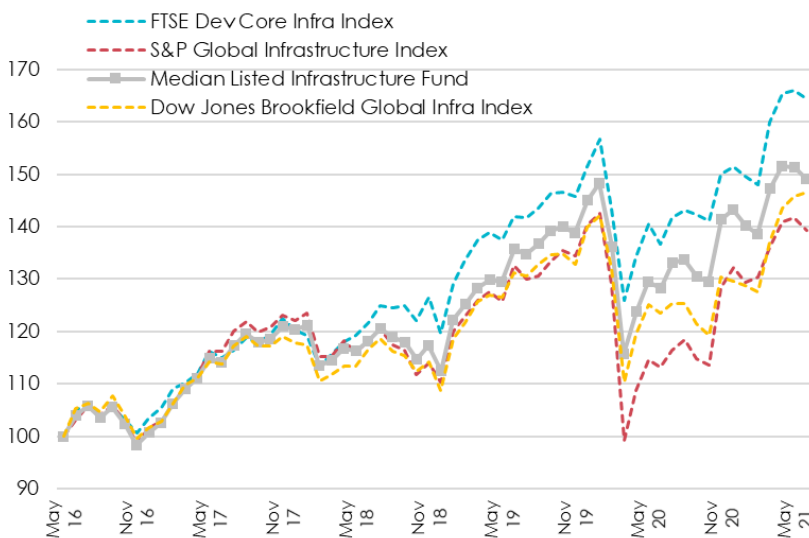
“Over the last five years, we have seen European-listed utilities write off €115 billion worth of value. That’s a significant amount of money this energy transition is costing... this is not a walk in the park.”

EURELECTRIC Secretary General Kristian Ruby, June 2017.

Stranded asset risk is underestimated by many investors, but the financial impacts can be severe. Ignoring or mispricing risks such as refinancing risk or insurance cost risks can have a material impact on stock prices.

Importantly, these impacts are not in some distant future but are being felt now. Another example of this is the contrasting performance of different listed infrastructure indices over recent years. Indices with higher exposure to fossil fuel-linked infrastructure assets such as the S&P Global Infrastructure Index have significantly underperformed and are becoming more volatile.

Chart 1: Global Greenhouse Gas Emissions and the Emissions Gap



Exposure to potentially stranded assets:

FTSE Dev Core Infra Index: ~12%

DJ Brookfield Global Infra Index: ~28%

S&P Global Infra Index: ~21%

Source: Bloomberg, eVestment. The Median Listed Infrastructure Fund is calculated based on the gross of fees median monthly returns of 20 global listed infrastructure funds.



CONCLUSION

It is important that investors into infrastructure funds be on the lookout for greenwashing, and instead look for investment managers that:

- Invest with a genuine long-term horizon. While it is unknown exactly when the market will price in lower-than-expected natural gas demand, for example, we do know that it will be well before it actually happens. It only takes small shifts to result in large losses.
- Do not benchmark against indices containing stranded assets. This incentivises holding on for too long and falling into value traps.
- Exclude fossil fuel-linked assets that will become stranded.
- Do not take a 'best-in-class' approach. The 'best' tar sands infrastructure, for example, will still soon be stranded.
- Do not use ESG scoring. This can average away a number of sins, and a good governance score doesn't offset carbon emissions.
- Look beyond the headline scope 1 and 2 emissions, to the actual risks and opportunities in each sector.

Disclaimer

This material has been prepared by Whitehelm Capital Pty Limited ACN 008 636 717. Whitehelm is the holder of an Australian financial services licence 24434 and is regulated under the laws of Australia.

This document does not relate to any financial or investment product or service and does not constitute or form part of any offer to sell, or any solicitation of any offer to subscribe or interests and the information provided is intended to be general in nature only. This should not form the basis of, or be relied upon for the purpose of, any investment decision. This document is not available to retail investors as defined under local laws.

This document has been prepared without taking into account any person's objectives, financial situation or needs. Any person receiving the information in this document should consider the appropriateness of the information, in light of their own objectives, financial situation or needs before acting.

This document is provided to you on the basis that it should not be relied upon for any purpose other than information and discussion. The document has not been independently verified. No reliance may be placed for any purpose on the document or its accuracy, fairness, correctness, or completeness. Neither Whitehelm nor any of its related bodies corporates, associates and employees shall have any liability whatsoever (in negligence or otherwise) for any loss howsoever arising from any use of the document or otherwise in connection with the presentation.